The sewage being discharged in a concentrated form, undiluted with rain-water, its value would be much enhanced as a liquid manure for the purpose of irrigation, should it be decided to employ it in that manner. For the same reason the first cost and working-expenses would be greatly reduced.

Provision for serving a population of 50,000 is, I maintain, ample, the possibility existing of extending the system to meet the future increase without sacrificing the work previously carried out.

The remarks in this paper have, of course, a catholic application: what has been said with reference to the difficulty of draining Wellington applies equally to all towns occupying flat sites, the difficulties which may arise, and sewage-gas nuisances which threaten, being the same.

The pneumatic system has, I venture to submit, solved the problem of how to drain localities effectually and cheaply which do not possess the natural conditions suitable for drainage by gravitation.

Art. XLIX.—*Notes on the Islands to the South of New Zealand.*

By A. Reischek, F.L.S.

[*Read before the Auckland Institute, 30th July, 1888.*]

At last the time came for me to say "Good-bye" to those solitary wilds on the west coast of the South Island where, amidst the grandest and most beautiful scenery, I had spent so many happy days. Truly, nature has lavished her favours on New Zealand, and I may well be excused for being sorry to leave it.

On the 19th January, 1888, the "Stella," under the charge of Captain Fairchild, left the Bluff for her annual tour to provision the dépôts kept up for the succour of shipwrecked sailors on the islands to the south of New Zealand. Mr. Dugald (the photographer), a few youths, and myself were the only passengers. We started first for Stewart Island, distant fifteen miles to the south-south-west. Passing through Foveaux Strait, dotted over with romantic little islands, we disturbed numerous flocks of mutton-birds (*Puffinus tristis*) which were feeding, playing, or sleeping on the water. A few nellies (*Ossifraga gigantea*) followed the vessel to pick up any scraps thrown overboard, which they greedily devoured.

Stewart Island is of irregular shape: its western or longest side runs in a north-and-south direction for about thirty-nine miles; the north and south-east sides are each

about thirty-three miles in length; its greatest breadth is about twenty miles. Passing the eastern side of Wilson's Bay we noticed a few houses scattered about near the shore, and some cattle grazing on the pastures. We steamed through Port Adventure, where the photographer obtained some fine views, and then went on as far as Lord's River, where we anchored. Two boats were lowered: one, manned by the second mate and some sailors, went fishing; the other was in charge of the captain, and this our party accompanied. We pulled up the river, which opens out into numerous pretty little bays. Its banks are low and broken, and densely wooded, mostly with mountain rata (*Metrosideros lucida*), manuka (*Leptospermum scoparium*), rimu (*Dacrydium cupressinum*), and some other shrubs. The scenery was varied and magnificent. We saw a few paradise ducks (*Casarca variegata*), numbers of grey ducks (*Anas superciliosa*) and brown ducks (*Anas chlorotis*); but they were all very shy. Nevertheless, several nearly full-grown young of the latter were caught alive. A small species of weka, not yet described, was caught peeping out between the rocks. Its plumage is rust-red; each feather has a blackish-brown streak in the centre; wings rust-red with black bars; throat yellowish-grey; breast rust-red; abdomen slaty-grey; bill and feet pink, the ridge of the former brown; eyes chestnut-brown. Total length from tip of bill to end of tail, 17in.; wing, 5·5in.; bill, 1·8in.; tarsus, 2in. On the trees overhanging the river numerous shags (*Phalacrocorax glaucus* and *P. varius*) were sitting digesting their last meal. Great numbers of kaka parrots (*Nestor montana*) were flying about warning their mates of our approach, while the bell-birds (*Anthornis melanura*) and tuis (*Prosthemadera novæ-zealandiæ*) welcomed us with their melodious whistles. A full-grown young tui was not sufficiently on the alert, for we saw a quail-hawk (*Hieracidea novæ-zealandiæ*) dart down on it, seize it in his talons, and bear it away to a secluded tree. I shot the hawk while in the act of devouring its victim, and here is the specimen. On returning to the steamer the other boat came alongside laden with fish. Some hapukas weighed 80lb., and there were many trumpeters and rock-cod. The next day found us storm-bound and at anchor off Evening Cove, in the extensive and beautiful harbour of Port Pegasus. Here I noticed the yellow-headed penguin (*Eudyptes antipodum*), so seldom seen by collectors. They were playing about the boat, and some were in the bush feeding their young, which they had in burrows. On land their movements are very ungainly, being a kind of waddling, or hopping walk. A sailor of the "Stella" shot one, imagining it to be a wallaby! During our stay here we noticed a sea-leopard fishing amongst the kelp a short distance from the

vessel. After a while we shifted to Wilson's Bay, twelve miles to the south, still waiting for the storm to abate. On the 21st January a start was made for the Snares, but owing to the terrible weather outside we had to return to the well-sheltered Port Pegasus. On the 22nd another attempt was made, and at 3 a.m. the Snares came in sight.

These islands lie sixty-two miles S. 22° W. from the south-west end of Stewart Island, and extend four and a half miles in a north-east and south-west direction. The north-east island, which is the largest, is little more than a mile in length by half a mile in width, and rises almost perpendicularly out of the sea to a height of 470ft. There are also several outlying rocks. It is volcanic in structure, according to a paper by Sir James Hector,* which contains notes on the geology of the whole of the outlying islands to the south of New Zealand. We anchored in 56 fathoms about half a mile from the eastern shore of the island. A boat was lowered, and we rowed to a little cove or boat-harbour. The birds received us with a chorus of deafening noises, swimming round the boat, and looking greatly surprised at such early arrivals. The island is mostly covered with bush, the akeake (*Olearia* sp.) and kokomuka (*Veronica elliptica*) being the commonest trees. The soil is moist, and largely mixed with guano. There is a little fresh-water stream flowing into the cove, but the water has a nasty taste, and is stained with guano. The whole surface is honeycombed with the numerous burrows of the petrels. Each of our party had his work to do. The captain and the sailors turned out two goats; Mr. Dugald, the photographer, took views; Mr. Hibs had to sow tree- and grass-seeds. I followed the birds, and at once saw three strangers—a black tomtit and a swamp-lark, which were common and tame; and a bell-bird, which was rare and shy. Unfortunately I had brought no gun on shore, and there was no time to return for it, so Mr. Bethune and I chased them, and succeeded in obtaining two, one tomtit and one swamp-lark; both of which I have sent to Dr. Finsch for examination. I have not seen either of these birds before, nor can I find any description of them, so they are probably entirely new. The tomtit was hopping about the lower branches of the trees near the ground, just as the tomtit of the South Island does. It differs, however, from it in its plumage, which is entirely black. Its measurements are as follows: Total length from the tip of the bill to the end of the tail, 5·25in.; bill, 0·75in.; tarsus, 0·9in.; tail, 2·45in. The swamp-lark or utick has rust-brown plumage streaked with dark-brown, top of the head darker; wings dark-brown, edged with light-brown; throat

* "Trans. N.Z. Inst.," vol. ii., p. 176.

and abdomen yellowish-brown with dark streaks; tail and legs yellowish-brown; bill and eyes dark-brown. Total length from the tip of the bill to the end of the tail, 7in.; primaries, 2in.; tail, 3in.; tarsus, 0·9in. It is different in its habits, plumage, and size from the uticks of the mainland (*Sphenœacus punctatus* and *S. fulvus*), which inhabit swamps and deep gullies, where they slip about through the fern or raupo like a mouse, mostly keeping on or near the ground. The utick of the Snares lives in the trees, and its movements are similar to those of the bell-bird, which on this island is darker in plumage than on the mainland. On the cliffs were adult and almost fully-grown young of the molly-mawk, the grey-headed albatross (*Diomedea chlororhyncha*) and the shy albatross (*Diomedea cauta*). The nelly, with its full-grown young, busied itself in the water. With them were mutton-birds (*Puffinus tristis*), diving petrels (*Halodroma urinatrix*), Cape pigeons (*Procellaria capensis*), dove petrels (*Prion turtur*), skua gulls (*Lestris parasiticus*), and mackerel gulls (*Larus scopulinus*). Thousands of penguins (*Eudyptes pachyrhynchus* and *E. chrysocomus*) were on the rocks, standing like regiments of soldiers. It was amusing to see Captain Fairchild, who delights in such sport, tumbling them into sacks, to be taken on board for museum purposes. Many of the young were still covered with down; those full-fledged had a far brighter plumage than the adults. Some disease was amongst them, for heaps of dead were lying about, and the captain and Mr. Dugald came across a perfect cemetery: thousands were lying rotting among the black sand, and the stench was dreadful. I spent a delightful morning, and could have spent a month among the birds, but, the wind freshening, the call was sounded for us to return to the vessel. We got up anchor, and steamed round the whole of the rocks, closely scanning them for any signs of castaway sailors; but, happily, without result. We then turned away, our menagerie of birds on board bidding farewell in chorus to their mates on shore. These are some of the specimens collected.

The vessel was now pointed towards the Auckland Islands, distant about one hundred and fifty miles S. and 5° W. We had very rough weather, westerly winds blowing with almost hurricane force. I had to work under difficulties, for the vessel would occasionally give a violent lurch, throwing me and my tools nearly across the deck, besides giving me a ducking. On the 24th of January we entered the fine harbour of Port Ross, and anchored not far from the abandoned site of Enderby's whaling settlement.

The Auckland Islands are a group consisting of one large island and several smaller ones, and extend over a space of about thirty miles in length by about fifteen in breadth.

They are very hilly and broken, and well watered with many fine streams. The formation is partly granite and volcanic, and partly sedimentary. The lower portions are usually covered with bush, which consists mostly of mountain rata (*Metrosideros lucida*), which grows to a height of 30ft., and sometimes has a diameter of 2ft. These trees have a very pretty appearance from their dark-green shining leaves. There is also the ivy tree (*Panax simplex*), the stink-wood (*Coprosma fœtidissima*)—so called from its bad smell when cut—and a close-growing bush very similar to tea-tree. Open places are covered with herbaceous plants of considerable size and great beauty, such as *Pleurophyllum speciosum*. This is allied to the cotton-plant of the Southern Alps, but is more beautiful. It grows several feet in height, and is covered with clusters of purple flowers. There are two species of *Ligusticum* which are very prominent. The flowers are pink and white, in dense clusters, and the leaves are green, with sharp-pointed divisions. They are closely allied to the aniseed plant growing in the Southern Alps. Another handsome plant is called golden lily (*Anthericum rossi*) by the sealers, on account of the bright-yellow blossoms. Upon the hills the chief vegetation is the tussock-grass, among which are a few flowering-plants, the blue, red, and white veronicas being the most abundant. The ground is often very boggy, and in other places we find only barren rocks.

We landed with a load of timber for a boat-shed. Some sea-lions were amusing themselves on the sand, but they walked lazily away on our approach. The shed was quickly put up under the captain's supervision. The noise of the hammers made animal life active. The sea-lions drew nearer, looking on with surprise. Rabbits, which are very numerous, raced about in all directions. Some wild dogs were sneaking about, but would not come close to us. On Enderby Island were several huts made of tussock-grass, bound together with thongs of the sea-lion's hide. These were constructed by the survivors from the wreck of the "Derry Castle." On the top of the hill was a life-buoy, which they had fixed on a long piece of wood to serve as a signal. After a boat was put into the shed and signboards fixed we steamed up the harbour to the dépôt at Erebus Cove, landing several sheep, and supplying the dépôt with provisions, clothing, matches, tools, &c. Here was the boat in which the survivors from the "Derry Castle" came across from Enderby Island.

On the 25th we steamed up to the head of the harbour known as Sarah's Bosom, putting up signboards to direct shipwrecked sailors to the dépôt. We saw a boat painted blue, also two columns 4ft. high and 1ft. 6in. square, with a flag of cement bearing the inscription, "German Expedition, 1874."

This marks the place where the transit of Venus was observed by the German scientists. From here we went to Ross Island, where numbers of sea-lions were noticed amusing themselves among the tussock. A boat was lowered, and several of us went on shore to drive the clumsy creatures into a group for Mr. Dugald to photograph. It was a most laughable sight. They tried to escape; but, being stopped by the sailors, squatted on their haunches, moving their heads from side to side, giving discontented growls, and looking at each other with surprise. Some of the males were very large, and had fine manes; the females are lighter in colour and smaller in size. They were plentiful, and I was sorry at not being allowed to procure some for scientific purposes; but on account of the close season the Marine Department would not give permission. The fur-seals are very rare and very shy. They inhabit the more exposed places, and are sometimes found in the caves, of which there are many, but usually empty.

We now steamed round North-west Cape towards the south, passing a most interesting sight—perpendicular cliffs standing boldly out, and appearing as if built of huge blocks of all imaginable shapes, the sea dashing on them, and sending the spray to a great height. On some of these cliffs are waterfalls, the water from which was blown upwards by the force of the wind so as to resemble fountains. From a distance they looked like steam-jets. We sailed inside Disappointment Island—a wild scene. The sea was boiling, breaking over the rocks with tremendous force, and sending the spray in all directions. This is the spot where the "General Grant" is said to have been driven into a cave when wrecked in 1866; but we did not see a cave large enough for any vessel to go into.

We now came round the South Cape of Adam's Island—the wandering albatross sailing along with us in hundreds—and called into North Harbour to put up a signboard; from thence we proceeded to Carnley Harbour, and anchored for the night. On the next day, the 26th January, I landed at 4 a.m., being permitted by the captain to spend the whole day on land. It was a delightful morning: the birds sang, the sea-lions grunted and growled at being disturbed so early; some tried to escape, others just sat on their haunches, showing their white canine teeth, too lazy to leave their lair. My path was at first through thick scrub, then through tussock-grass and over bogs and barren rocks. The birds that I noticed were the bell-bird, the blight-bird, the yellow-breasted tit (*Petrœca macrocephala*), the ground-lark, the little parrakeet (*Platycercus rowleyi*), the banded dotterel, and the native snipe (*Gallinago aucklandica*). (In my account of Port Ross I forgot to mention that I went up a creek, where I saw a number of ducks. I approached them very carefully, and was within a few yards

of shooting-distance, when the captain discharged a gun a little distance away. This disturbed them, and they disappeared. They looked like the grey duck—*Anas superciliosa*.)

Now, returning to my hill-expedition, I was delighted to be once more among my feathered friends, and spent some hours watching their movements and procuring specimens. All at once I heard the whistle of the "Stella," and, following down the nearest gully, I saw her steaming up and down the harbour, blowing the fog-horn. It was 2 p.m. I endeavoured to hurry; but my specimens, and the holes, bogs, and dense scrub, made this difficult. During the scramble I fell into a hole. A loud barking growl announced that I had nearly tumbled on the top of a large sea-lion, which had been asleep in it. We both looked surprised. He did not move, but sat up, showing his white canine teeth. I pulled out my sheath-knife, and, keeping my eye on him, scrambled out backwards, and bade farewell to my new acquaintance. At last I came on a sealer's track, which led me to the water, and a boat took me on board; but there were still more on shore who believed in enjoying the whole time promised by the captain, who had done his work sooner than he had expected. When I unpacked my specimens I found that through this hurry I had lost several, and broken nearly all the eggs that I had collected.

Passing Monument Island, with its peculiar-shaped rocks, we anchored a short distance from where the "Grafton" was wrecked. A boat was sent on shore to examine the remains of the vessel, which are scattered along the shore. Captain Fairchild informed me that not far from here is the best anchorage in the Auckland Islands. We next explored the sounds of the east coast, some of which cut far into the centre of the island. In Waterfall Inlet the water is so deep that the steamer's jib-boom was among the trees growing on the cliffs when we were taking in water from a beautiful fall. On the cliffs the sooty albatross (*Diomedea fuliginosa*) was breeding. I also saw six mergansers, and shot two of them; the others concealed themselves among the rocks. Their habits are like those of a duck and not like those of their European allies, which usually escape by diving. Among the other birds seen were the skua gull, the black-backed gull, the mackerel gull, the yellow-billed albatross, the nelly, the Cape pigeon, and the white-headed petrel (*Procellaria lessoni*). I now exhibit the specimens collected on the Auckland Islands.

On the 28th January we arrived at Campbell Island, after a very rough passage. It is 164 miles from the Auckland Islands in a south-east direction, and is about ten miles from north to south, and eleven from east to west. Its geological formation is partly sedimentary and partly volcanic. It is

very hilly, and the faces of the hills are often dotted over with precipices. The greatest height is 1,866ft. There is plenty of fresh water. We anchored in Preservation Inlet, and were stormbound there. So strongly did it blow that Mr. Neil, the chief officer, who was a kind supporter of mine, on going out in a boat to get some birds that I had shot from the vessel, which had two anchors out, was twice blown away from the vessel by the force of the wind. The higher hills were all snow-clad, and it was bitterly cold, westerly squalls, accompanied by hail, frequently passing over. We divided into two parties—one went up Mount Honey, the other Mount Beeman. I went up the cliffs in search of the sooty albatross, several of which were flying about; but as soon as I had shot one the others disappeared. It breeds in the recesses of the cliffs, and is very difficult to get at. It is not so common on these islands as the wandering albatross; but is certainly the prettiest of the family. The only true land-bird noticed by myself on the island was the blight-bird, which is common everywhere. When the Austrian frigate "Saida" was five hundred miles from New Zealand a flock of these little birds came on board. Herr Ritter von Wolf, the flag-lieutenant, wrote me that they were seen sitting on the rigging, and several were procured. I was informed that the tui and a wingless duck inhabit the island; but I did not see any. Wandering albatrosses were plentiful, sitting on a single egg, nearly hatched. On the cliffs exposed to the ocean thousands of molly-mawks (*Diomedea melanophrys* and *D. chlororhyncha*) were breeding. In the water numbers of nellies were swimming about with their full-grown young, which are of a beautiful dark-slate colour. One of the young birds which I saw on shore, when I approached it, walked to meet me, opened its bill, and disgorged a mass of oily matter over me, as if poured from a spout. Its smell was so bad that I had to throw away the clothes I had on. I caught some of the young birds and brought them alive to Wellington; but when I looked for them there I was told by the sailors that they had gone overboard. Cape pigeons were very numerous, and plenty of magellanic shags were fishing with their young. The dépôt at Fuller's Point was supplied with necessaries, some sheep and goats were landed, trees planted, and seeds sown; then we steamed round the island, examining every cove, and sounding as we went along. At North-west Bay there is a remarkable rock, which at a distance looks like a full-rigged ship, but nearer at hand resembles a statue. Sea-lions were very plentiful and very large, but of fur-seals I only saw one. Storms are of almost daily occurrence in these waters, and we rode out one in North-east Bay. On the 31st we left Campbell Island for Antipodes Islands.

On the 1st February it was blowing very hard. The sea was running very high, and the vessel, being light, rolled about like an empty drum. At meals we had to hold on to the table. Sometimes one of the party would roll about in the cabin, plates, dishes, cruet-stand, &c., following him. At night the wind fell, and a hazy fog covered the ocean. Being near the Antipodes, the captain went on very cautiously, and at last we sighted the islands, which are about 403 miles north-east from Campbell Island. The group consists of several detached rocks and islets, occupying a space of from four to five miles long by two miles broad. The largest island is about 1,300ft. high, and some of the cliffs rise perpendicularly for 600ft. out of the ocean. There is not much shelter for vessels, the anchorage is deep, and landing bad from the heavy roll of the ocean. Thousands of penguins, of three species (*Eudyptes pachyrhynchus*, *E. chrysocomus*, *E. filholi*), were standing as if glued to the rocks; but on our approach some rolled into the water. We steamed round the whole of the islands, sounding, and looking for castaway sailors. I did not see any seals, and Captain Fairchild informed me that he had never seen them on his previous visits. Wandering albatrosses, sooty albatrosses, molly-mawks, and Cape pigeons were hovering about, and the magellanic shag busied itself in the water. The weather was so bad that several times we had to shift our quarters, keeping steam up the whole time. At last we anchored on the south-east side, under the lee of a rock. Some of us commenced fishing, and caught quantities of a fish resembling blue cod, except in having a greenish-yellow rim round the mouth. Some were fried for dinner, but were exceedingly coarse, tasting like raw mussels. I examined some of them, and found that they were diseased, the flesh being filled with small parasites. After awhile a boat was lowered, provisions were put in for the dépôt, and the remainder of the sheep and goats that we had brought from Invercargill, and we pulled towards the shore. As we got nearer the penguins received us with their chorus of noises. Landing we found to be difficult.

The island is as hilly as the previous ones, and appears to be wholly volcanic. At an elevation of about 600ft. there is a large flat, and on each side of it a mountain. Mount Galloway, the highest, is 1,320ft. I was told by the captain that there is a fresh-water lake on the top, but I had no time to visit it. The vegetation consists of tussock-grass, with some cotton-plants, aniseed, and veronicas intermixed with it, and there is no bush whatever. The tussock-grass all grows in humps, except on the tops of the hills, where it is shorter. There is fresh water, but it is stained with guano. The birds that I observed while on shore were two species of parrakeets;

a ground-lark; the snipe (*Gallinago aucklandica*); the wandering albatross, which had just commenced to lay; the white-headed petrel (*Procellaria lessoni*), whose eggs were nearly all hatched. All round the shore the tussock was covered with the egg-shells of the penguins, which the skua gulls had carried there to devour. These birds are so rapacious that if an egg or young bird is left alone they dart down like a hawk and carry it away. I saw a half-grown penguin crawl out of its hiding-place between some rocks, when immediately two of these gulls swooped down and devoured it on the spot, one eating at the neck, the other tearing open the abdomen. The ground-lark and the two parrakeets are entirely different from any birds found on the mainland or the surrounding islands, both in size, plumage, and habits. The parrakeets are larger and plumper than the New Zealand species, the bill is shorter and thicker, the plumage is brighter, with a peculiar shimmer towards the tips of the feathers. They live in burrows in the ground, and are very difficult to shoot, as they get up almost under your feet, fly a short distance, and then run among the tussocks and hide themselves in the holes. The larger species has the whole of the plumage of the upper parts dark-green, each feather edged with lighter; top of the head and round the bill emerald-green; throat, breast, and abdomen yellowish-green; tail and wings dark-green with yellow edges; primaries indigo-blue; legs and bill bluish-grey, the latter black towards the tip and underneath; eyes red. Length from the tip of the bill to the end of the tail, 13·5in.; bill, 1·25in.; wing, 6in.; primaries, 4·3in.; tail, 4·5in.; tarsus, 1in.; middle toe, 1·35in. They were originally discovered by Captain Fairchild some years ago, when they were plentiful and tame; now they are rare and wild. The other species which I discovered is not mentioned in Buller's or Gould's books. Plumage similar to the preceding, with the exception that the emerald-green round the bill is not so conspicuous, and that the top of the forehead, a streak below the eye, and a patch on each side of the tail-coverts are brownish-red. On the back of the neck the basal half of each feather is yellow. Total length, 12·25in.; bill, 1in.; wing, 5·6in.; primaries, 4·25in.; tail, 4·5in.; tarsus, 0·9; middle toe, 1·15in. The female is smaller in size, duller in plumage, and the red is not so conspicuous. Professor Thomas, Mr. Cheeseman, and I have made a careful examination of this bird, and find that it is new to the New Zealand fauna; so I have taken the liberty of naming it *Platycercus hochstetteri*, after Arthur von Hochstetter, the son of a sincere friend from whom I received many kindnesses, and who has too soon passed away. I now exhibit a male and female of this new species. I found in their crops grass and various seeds on which they feed.

The ground-lark of the Antipodes, which was seen hopping about among the tussocks, is similar in its habits to the New Zealand species, but is smaller in size and has a different plumage. Male: Upper surface dark-brown, each feather with a light-brown edge; the outer half of the two outside tail-feathers a cream-colour; throat and breast cream-colour with a few brown streaks; abdomen light pinkish-brown; eyes dark-brown; bill and legs brown. Total length, 7·15in.; bill, 0·75in.; wings, 3·5in.; primaries, 2·75in.; tail, 2·65in.; tarsus, 0·9in.; middle toe, 1in. In the female the upper surface, wings, and tail are like the male, but lighter; throat, breast, and abdomen rusty-yellow, a few oblong brown streaks on the breast; measurements slightly smaller. Professor Thomas and Mr. Cheeseman agree with me in thinking this to be a distinct species, not yet described. I have therefore named it *Anthus steindachneri*, after Dr. Franz von Steindachner, Privy Counsellor, and Director of the Imperial Museum at Vienna, in recognition of his kindnesses to me.

The Antipodes were visited many years ago; for the second engineer of the "Stella," Mr. Bethune, picked up a piece of totara board with this inscription: "To the memory of W. Foster, chief officer of the schooner 'Prince of Denmark,' who was unfortunately drowned in the Boat Harbour, December 17, 1825."

After exchanging some of our live-stock, by taking on board fresh penguins and letting others go that we had taken from the Snares, we steamed to the Bounty Islands, distant 110 miles to the north-east. They are a cluster of thirteen rocky islets, covering a space three and a half miles long by one and a half miles broad. They are very much exposed to the surf, and landing is very bad and dangerous. No dépôt has been placed on them. I did not see any vegetation; but they are covered with millions of birds—three species of penguins, the same as on the Antipodes; two species of molly-mawks (*Diomedea melanophrys* and *D. chlororhyncha*); and the dove-petrel (*Prion turtur*). All of these were breeding. The stench from the guano was dreadful, and the noise deafening. There was no space, even of a few feet, free from birds, and I have never before seen such a sight. After a short stay we left for Port Chalmers, 360 miles to the south-west. We experienced our usual rough weather, and just got into port as the wind was freshening to hurricane force.

To summarise, I may say that on the Snares there are three species of birds not found on the mainland—a bell-bird, a tomtit, and a swamp-lark; on the Auckland Islands three—a parrakeet, a snipe, and a merganser; on the Antipodes three—two parrakeets and a ground-lark. The distribution of

the sea-birds is more general, as they are often carried by storms for long distances.

My trip was a very pleasant one, but too short; for on each of the islands I could have found several months' work. Notwithstanding the interest felt in my pursuits, it was sad to me to see so many vestiges of disastrous shipwrecks. No one can say how many human beings have lost their lives there and perished in a watery grave. Most sailing-vessels bound from Australia to Europe, or *vice versâ*, pass near these islands, and the constant bad weather and dense mists render them very dangerous localities. Passengers who have just said "good-bye" to their friends at the antipodes to meet others in Europe, or those who, after a long and dreary voyage, were coming near their destination, have been awakened by a lurch or two and a sudden shock to find their vessel going rapidly to pieces in the tremendous seas. What a relief it must be to the survivors to find a dépôt where they can obtain shelter and the necessaries of life!

I am sure that you will take delight in looking through the album of beautiful views taken by Mr. Dugald, the photographer, of the chief localities visited by the "Stella." Mr. Cheeseman has kindly lent me a copy of Sir Joseph Hooker's "Flora Antarctica," which contains coloured illustrations of the plants inhabiting the islands; and I am much indebted to Mr. Cochrane for the loan from the Bishop's library of vol. vii. of Gould's "Birds of Australia," in which you will find beautiful drawings of many of the birds I have mentioned.

In conclusion, as this is my last paper, I have to thank the President and members of the Institute for the kind manner in which they have treated me during my stay in New Zealand.

Art. L.—*On the Visit of Captain Cook to Poverty Bay and Tolaga Bay.*

By Archdeacon W. L. Williams.

[*Read before the Auckland Institute, 24th September, 1888.*]

Plate XXXIII.

The interest which will always attach to the first visit of Captain Cook to the shores of New Zealand is sufficient justification for any attempt to elucidate any portion of his narrative, and, by the aid of personal acquaintance with the localities touched at, and reference to Maori traditions of the events, to enable any reader to present to his mind a more